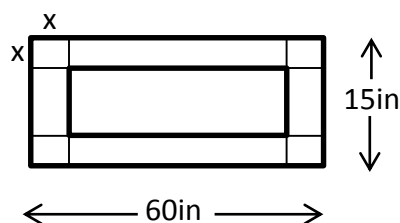


1. Dixie Packaging Co. has contracted to manufacture a box with no top that is to be made by removing squares of width x from the corners of a 15in by 60in piece of cardboard. Determine x so that the volume of the box is at least 450 in^3 . What value of x will yield the largest volume?



2. A state highway patrol safety division collected the data on stopping distances in the table.

- A) Draw the scatter plot.
 B) Find the quadratic regression model.
 C) Predict the stopping distance for a vehicle traveling at 25mph.
 D) Predict the speed of a car if the stopping distance is 300ft.

Speed (mph)	Stopping distance(ft)
10	15.1
20	39.9
30	75.2
40	120.5
50	175.9

3. Sally's distance D from a motion detector is given by the data in the table.

- A) Find the cubic regression model.
 B) Use the cubic regression model to estimate when Sally changes direction. How far is she from the motion detector when she changes direction?

time(sec)	distance(m)
0.0	3.36
0.5	2.61
1.0	1.86
1.5	1.27
2.0	0.91
2.5	1.14
3.0	1.69
3.5	2.37
4.0	3.01
4.5	3.59
5.0	4.15
5.5	3.99
6.0	3.37
6.5	2.58
7.0	1.93
7.5	1.25
8.0	0.67

4. The table shows the numbers S of FM radio stations in the United States from 1997 to 2003.

A) Find the linear regression.

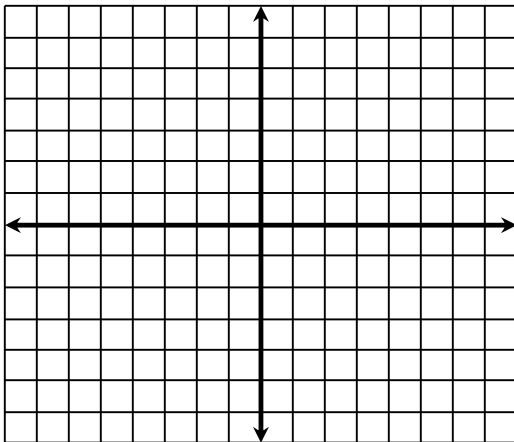
B) Find the quadratic regression.

C) Which regression model is the better fit? Why?

D) Use the best model to predict when the number of stations will exceed 7000.

year	Number of stations
1997	5542
1998	5662
1999	5766
2000	5892
2001	6051
2002	6161
2003	6207

*5. Graph: $f(x) = x^4 - 2x^3 - 4x^2 + 2x + 3$



Step 1:

Step 2:

Step 3:

Step 4:

*6. Find a polynomial that has the given zeros: -2, 1 m:2, 5.